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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/997,272	11/30/2001	Sam Ziqun Zhao	1875.2200001	2600
26111	7590	11/03/2003	EXAMINER	
STERNE, KESSLER, GOLDSTEIN & FOX PLLC 1100 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			ZARNEKE, DAVID A	
			ART UNIT	PAPER NUMBER
			2827	

DATE MAILED: 11/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/997,272

Applicant(s)

ZHAO ET AL.

Examiner

David A. Zarneke

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-67 is/are pending in the application.
- 4a) Of the above claim(s) 14-38 and 44-67 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 39-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of claims 39-43 is acknowledged.

Claims 14-38 and 44-67 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to either a nonelected group or a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse.

Claims 1-13 have been cancelled by Applicant.

Information Disclosure Statement

The information disclosure statements (IDS) submitted on 8/20/02, 7/7/03 and 8/28/03 were filed before the mailing date of this non-final rejection. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, these information disclosure statements have been considered by the examiner and an initialed, signed and dated copies of these IDS's have been included herewith.

The information disclosure statement (IDS) submitted on 7/29/02 has not been considered by the examiner. The copies of the non-patent literature included in this IDS have been misplaced by the PTO and is currently being located. Once these documents have been located and put in the file, the examiner will consider them.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pastore et al., US Patent 5,285,352, in view of Mertol, US Patent 6,011,304.

Pastore teaches a ball grid array (BGA) package (Figure 2), comprising:

a substrate (14) that has opposing first and second surfaces, wherein said substrate has a window opening (30) through said substrate that is open at said first surface and said second surface;

a stiffener (37) that has a surface attached to said second surface of said substrate; and

a heat slug (28) that has a first surface attached to a portion of said surface of said stiffener through said window opening, wherein said heat slug has a second surface that is capable of being mounted to a printed circuit board (PCB).

Though Pastore teaches the plated, metallized area (37) as serving two purposes, one being to improve thermal conduction, and the other being to act as a ground plane (6, 20+), it inherently would also act as a stiffener. Pastore teaches the layer (37) as being made of two layers of metal (6, 3+) that is as thick as possible (6, 41+) to improve manufacturability and reliability (6, 44+). One of ordinary skill in the art would know that a thick multiple layer metal would inherently impart stiffening qualities upon the device package.

Pastore fails to teach the stiffener including a first portion of a locking mechanism and said heat slug includes a second portion of said locking mechanism, wherein said locking mechanism aligns said heat slug with said stiffener when coupled together.

Mertol teaches a device package having a stiffener (11) with slots (12) and a heat sink (21) with surface bumps (14) [Figure 5B].

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the locking mechanism of Mertol in the invention of Pastore because

Mertol teaches that the locking mechanism secures heat sink to the stiffener while allowing the heat sink to be easily removed (3, 1+).

Regarding claim 41, while Mertol fails to teach using an adhesive to adhere the bump in the slot, the use of an adhesive to attach two materials together is conventionally known in the art. The use of conventional materials to perform there known functions in a conventional process is obvious. In re Raner 134 USPQ 343 (CCPA 1962).

Claims 42 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pastore et al., US Patent 5,285,352, in view of Mertol, US Patent 6,011,304, as applied to claims 39-41 above, and further in view of Carden, US Patent 6,552,266, or Niwa, US Patent 5,998,241.

Pastore and Mertol both fail to teach the heat slug having the slot and the stiffener having the surface bump.

Both Carden and Niwa teach a heat slug having a slot and a stiffener having a surface bump that inserts into the slot (see Figures).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the locking mechanism of either Carden or Niwa in the invention of Pastore because Carden teaches that this locking mechanism properly aligns the heat slug to the stiffener and aids in the attaching of the two together.

With respect to claim 43, while both Carden and Niwa fail to teach using an adhesive to adhere the bump in the slot, the use of an adhesive to attach two materials together is conventionally known in the art. The use of conventional materials to

perform there known functions in a conventional process is obvious. In re Raner 134 USPQ 343 (CCPA 1962).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 39-43 are provisionally rejected under the judicially created doctrine of double patenting over claims 1-45 of copending Application No. 10/284,166, claims 1-12, 22 and 24-32 of copending Application No. 10/284,312, claims 14-22 of copending Application No.s 10/201,309, 10/284,371, 10/200,336, 10/201,893, 10/201,891, 10/197,438, and 09/742,366 . This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows: the claims of these

copending applications contain substantially the same subject matter, except for the locking mechanism of the present application.

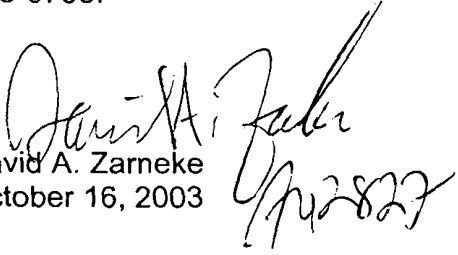
Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A. Zarneke whose telephone number is (703)-305-3926. The examiner can normally be reached on M-F 10AM-6PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on (703)-308-1233. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-6789.


David A. Zarneke
October 16, 2003